

REMARKS

Status of the claims

Claims 1-9, 12-19, 22, 23, and 38-50 are pending in the application. Claims 1, 4, 5, 8, 12-17, 19, 21-23, 38 and 39 are rejected. Claims 1, 9 and 38 are amended. Claims 10-11, 20, and 24-37 were canceled previously. Claims 2-4, 6, 7, 14, 18, 20, and 40-50 are canceled herein. No new matter has been added.

Amendment to the claims

Claim 1 is amended to incorporate limitations of claim 4 and recites "a composition, comprising: at least one biomolecule; and an electromagnetic energy absorbing metal susceptor, wherein the biomolecule is chemically bound to the susceptor". This amendment is supported by the instant specification, including but not limited to the descriptions on pages 14, 17 and 36 of the specification.

Claim 9 is amended and recites "the composition of claim 1, wherein the biomolecule is a component of biomaterial". This amendment is supported by the instant specification on page 13, lines 21-23, and page 14, lines 1-9.

Specification

The Examiner states that the disclosure is objected because the first paragraph in the specification should indicate up-to-date claims of benefit to priority U.S. Application.

The cross-reference to related application section of the specification has been amended to indicate that U.S. Patent No. 6,689,380 issued from U.S. Serial No. 09/573,147. Accordingly, the Applicants respectfully request the objection to the specification to be withdrawn.

Claim objection

The Examiner states that the instant specification contains claims 2, 3, 6, 7, 18, 26, 29, 30 and 40-50 drawn to an invention nonelected without traverse in the response of September 30, 2009. Applicants respectfully traverse this objection.

Applicants respectfully submit that claims 24-37 were canceled previously, and claims 2-3, 6-7, 18, and 40-50 are canceled herein. Claim 9 is amended to limit the claimed subject matter of the biomolecule as the component of biomaterial. Accordingly, the Applicants respectfully request withdrawal of the objection.

The 35 U.S.C. §102 rejection

Claims 1, 8, 9, 12-16, 19, 21 and 22 stand rejected under 35 U.S.C. §102(b) as being anticipated by **Burton et al.** (IEEE Transactions on Bio-medical Engineering, 1971, BME18 (2), 104-109). The Applicants respectfully traverse this rejection.

The Examiner states that **Burton et al.** teaches albumin and stainless steel or nickel-chromium, nickel-copper and nickel-palladium alloys in a composition. In the Examiner's opinion, the instant claims 12-14 recite the inherent properties of

the metal alloys taught by **Burton et al.** and thus the instant invention is anticipated by **Burton et al.** According to the Examiner, in the teaching of **Burton et al.**, the applied radio frequency had caused coagulation of albumin, and the small genus of nickel alloys, which includes a titanium combination is anticipatory. Applicants respectfully disagree.

Applicants respectfully submit that **Burton et al.** teach development of low temperature–Curie point alloys to make self-thermally-regulating implants (thermoseeds) generating inductive heat to produce therapeutic brain lesions (page 104, col. 1, para 2). The Curie point temperatures for particular iron-nickel-based alloys can be adjusted by blending with certain amounts of chromium, copper or palladium (page 105, col. 1, para 6; col. 2, para 1; page 108, col. 2, para 2). Coagulation of albumin around the thermoseeds stabilizes the brain treatment temperatures near the particular Curie point for each type of the implant to maintain constant temperature during coagulation of brain tissue (page 107, col. 2, para 1). **Burton et al.** do not teach each and every element of a composition, comprising at least one biomolecule and a metal susceptor absorbing electromagnetic energy.

Claim 1 is amended to recite a composition comprising a biomolecule and an electromagnetic energy absorbing metal susceptor, wherein said biomolecule is chemically bound to said susceptor". The external electromagnetic field is used to activate the biomolecules to arrive at the instant invention. Furthermore, the instant invention discloses a composition, wherein the biomolecule, the electromagnetic

energy absorbing species or both undergo a change in state upon application of electromagnetic energy to the composition.

Initially, Applicants respectfully submit that while **Burton et al.** describe testing thermoseeded couples in protein (e.g., albumin), the protein in **Burton et al.** is not chemically bound to the thermoseeded couples. On the contrary, in the instant invention, the biomolecule is chemically bound to the susceptor.

Secondly, Applicants respectfully submit that while **Burton et al.** describe testing thermoseeded couples in air, as well as in protein (e.g., albumin), **Burton et al.** do not disclose the protein (such as albumin) as a part of a composition claimed in the instant invention. **Burton et al.** do not disclose a composition comprising a biomolecule. On the contrary, in the instant invention the protein is an important component of the composition as the protein is linked, i.e., chemically bound, to the electromagnetic energy absorbing species in the instant invention.

Therefore, Applicants submit that **Burton et al.** do not teach each and every element disclosed by the instant invention. Therefore, the teaching of **Burton et al.** does not anticipate the instant claims 1, 8, 9, 12-16, 19, 21 and 22. In view of the arguments presented, Applicants respectfully request that the rejection of claims 1, 8, 9, 12-16, 19, 21 and 22 under 35 U.S.C. §102(b) be withdrawn.

Claims 1, 4, 5, 8, 9, 12-15, 21-23, 38 and 39 are rejected under 35 U.S.C. §102(b) as being anticipated by **Lohrmann et al.** (U.S. Patent No. 6,193,953). Applicants respectfully traverse this rejection.

The Examiner states that **Lohrmann et al.** teaches compositions comprising albumin, chromium and perfluorooctane in a liposome and applying an ultrasonic field with 5 MHz frequency. Therefore, the instant claims 1, 4, 5, 8, 9, 12-15, 21-23, 38 and 39 are anticipated by the teaching of **Lohrmann et al.** Applicants respectfully disagree.

Applicants respectfully submit that **Lohrmann et al.** teach specifically labeled microparticles for the enhanced ultrasonic imaging (col. 1, lines 1-3). The stabilized and specifically labeled hydrophilic microparticles form a suspension in a sterile aqueous injectable carrier for the targeted delivery (col. 4, lines 52-62). The microparticles are filled with gas or liquid to make them easily detectable using any ultrasonic imaging equipment (col. 14, lines 6—67). The ultrasonic imaging does not change the entropy of the tissue or organ during the imaging process (col. 19, lines 5-12). The teaching of **Lohrmann et al.** lacks experimental data supporting the use of electromagnetic energy to activate biomolecules and anticipating the instant claims.

Initially, Applicants respectfully submit that while **Lohrmann et al.** describe a use of protein (human albumin) solution in the preparation of liquid-filled microparticles and gas-filled microparticles, **Lohrmann et al.** do not disclose the protein (albumin) as a part of a composition claimed in the instant invention. **Lohrmann et al.** do not disclose a composition comprising a biomolecule. On the contrary, in the instant invention, protein (albumin) is an important component of said composition as the protein is linked or chemically bound to electromagnetic energy absorbing species.

Secondly, Applicants respectfully submit that **Lohrmann et al.** describe a treatment of microparticles with chromium potassium sulfate solution. Such treatment will obviously result in obtaining microparticles containing the metallic salt, not the metal. Therefore, the microparticles do not contain a metal susceptor as in the claimed invention.

Thirdly, Applicants respectfully submit that chromium potassium sulfate solution used by **Lohrmann et al.** contains potassium. Therefore, chromium in said microparticles is modified by potassium. In the instant invention, chromium modified by any chemical means such as potassium was not used.

Fourthly, Applicants respectfully submit that **Lohrmann et al.** do not disclose the use of electromagnetic energy. **Lohrmann et al.** describe a use of an ultrasound machine, but the application of ultrasound is not related in any way to the use of electromagnetic energy claimed in the instant invention.

Therefore, **Lohrmann et al.** do not disclose each and every element of the instant invention. In view of the arguments presented, Applicants respectfully request that the rejection of claims 1, 4, 5, 8, 9, 12-15, 21-23, 38 and 39 under 35 U.S.C. §102(b) be withdrawn.

Claims 1, 8, 9, 12-17 are rejected under 35 U.S.C. §102(b) as being anticipated by **Lawin et al.** (U.S. Patent No. 5,451,406). Applicants respectfully traverse this rejection.

The Examiner states that **Lawin et al.** teaches compositions comprising beta-glucan (biomolecule), zirconium oxide as a metal susceptor in the particle size

range 100-1000 micron. The Examiner notes that a titanium alloy is mentioned in claim 3. Applicants respectfully disagree.

Applicants respectfully submit that **Lawin et al.** teaches tissue injectable compositions and methods of use (Abstract). **Lawin et al.** teaches compositions with physiologically stable microparticles in a lubricative suspension, solution or other gluish liquid or gel (Abstract, lines 1-4). The teaching of **Lawin et al.** describes a plurality of carbon-coated particles along with the viscous lubricative carrier (col. 2, lines 1-36). The delivery way for the particles is via injection only (col. 5, lines 10-12). The teaching of **Lawin et al.** does not include experimental data supporting the use of electromagnetic energy and any kind of biomolecule activation.

Initially, Applicants respectfully submit that a beta-glucan disclosed by **Lawin et al.** is a polysaccharide. Therefore, **Lawin et al.** cannot anticipate the instant claim 8 reciting a protein as a biomolecule.

Secondly, Applicants point out that **Lawin et al.** used zirconium oxide in their work. However, zirconium oxide is not a metal (for it is not a chemical element or alloy of chemical elements), and so neither is it a zirconium alloy (which has also to be a metal).

Thirdly, Applicants submit that **Lawin et al.** do not disclose the use of electromagnetic energy and the use of an electromagnetic energy absorbing metal succceptor claimed in the instant invention. While macroscopic pieces of pure zirconium could be inductively heated, it is not possible to inductively heat zirconium oxide powder. Applicants submit that zirconium oxide is not a good

conductor of heat or electricity. **Lawin et al.** do not teach how to inductively heat this material.

Therefore, Applicants submit that **Lawin et al.** do not teach each and every element disclosed by the instant invention. In view of the arguments presented, Applicants respectfully request that the rejection of claims 1, 8, 9, and 12-17 under 35 U.S.C. §102(b) be withdrawn.

This is intended to be a complete response to the Office Action mailed June 08, 2011. Applicants also submit a Petition for Three Month Extension of Time and Form PTO 2038. Please charge the \$635 petition fee under 37 C.F.R. §1.17(a) to the credit card identified on the electronic fees form SB-06. Please debit any underpayment of fees from or credit any overpayment of fees to Deposit Account No. 07-1185. If any issues remain, please telephone the undersigned attorney of record for immediate resolution.

Respectfully submitted,



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